UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,260	02/04/2004	Nozomu Tokano	511.40488RO1	2441

20457 7590 03/15/2007

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-3873

EXAMINER	
FEELY, MICHAEL J	
ART UNIT	**PAPER NUMBER**
1712	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/15/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/771,260	TOKANO ET AL.	
	Examiner	Art Unit	
	Michael J. Feely	1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4,8-10 and 13-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,8-10 and 13-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/913,726.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Pending Claims

Claims 1, 4, 8-10, and 13-31 are pending.

Reissue Applications

1. In accordance with 37 CFR 1.175(b)(1), a supplemental reissue oath/declaration under 37 CFR 1.175(b)(1) must be received before this reissue application can be allowed.

Claims 1 and 29-31 are rejected as being based upon a defective reissue oath/declaration under 35 U.S.C. 251. See 37 CFR 1.175. The nature of the defect is set forth above.

Receipt of an appropriate supplemental oath/declaration under 37 CFR 1.175(b)(1) will overcome this rejection under 35 U.S.C. 251. An example of acceptable language to be used in the supplemental oath/declaration is as follows:

> "Every error in the patent which was corrected in the present reissue application, and is not covered by a prior oath/declaration submitted in this application, arose without any deceptive intention on the part of the applicant."

See MPEP § 1414.01.

Response to Amendment

2. The declaration under 37 CFR 1.132 filed December 30, 2005 is sufficient to overcome the rejection of claims 2-18, 23-25, 27, and 28 based upon the combined teachings of Babcock et al. (US Pat. No. 5,340,644) and Takano et al. (EP 0 837 090).

3. The declaration under 37 CFR 1.132 filed December 30, 2005 is sufficient to overcome the rejection of claims 2-18, 23-25, 27, and 28 based upon the combined teachings of Leibfried (US Pat. No. 5,451,637) and Takano et al. (EP 0 837 090).

4. The rejection of claims 1 and 26 under 35 U.S.C. 102(b) as being anticipated by Ohta et al. (US Pat. No. 5,641,997) has been overcome by amendment.

5. The rejection of claims 1, 19-22, and 26 under 35 U.S.C. 103(a) as being unpatentable over Babcock et al. (US Pat. No. 5,340,644) has been overcome by amendment.

6. The rejection of claims 1, 19-22, and 26 under 35 U.S.C. 103(a) as being unpatentable over Leibfried (US Pat. No. 5,451,637) has been overcome by amendment.

7. The rejection of claims 1 and 26 under 35 U.S.C. 103(a) as being unpatentable over Beckley et al. (US Pat. No. 5,552,466) has been overcome by amendment.

Claim Objections

8. Claims 8-10, 13, and 14 are objected to because of the following informalities: claims 8 (and 9 & 10) are dependent from claim 7; however, claim 7 is now cancelled; claim 13 is dependent from claim 11; however, claim 11 is now cancelled; claim 14 is dependent from claim 12; however, claim 12 is now cancelled. Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1, 4, 8-10, and 13-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The instant claims comprise a resin, an inorganic filler, and a silicone polymer, *wherein the inorganic filler has previously been subjected to a surface treatment by a silicone polymer.* It is unclear if "a silicone polymer" is referring to the surface treatment of the inorganic filler or some additional resin material present in the composition.

Based on the instant Specification, including the Examples, it appears that "a silicone polymer" is indeed referring to the surface treatment of the inorganic filler. However, in order to more clearly present claimed invention, it is suggested that claim 1 be amended as follows:

(1) A prepreg which comprises a substrate and a resin composition containing a resin and an inorganic filler in a amount of 25% by volume or more based on the total volume of a solid component of the resin composition, which resin composition being impregnated into the substrate, wherein the inorganic filler has previously been subjected to surface treatment by a silicone polymer.

Claim Rejections - 35 USC § 102/103

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. Claims 1, 4, 8-10, and 13-31 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takano et al. (EP 0 837 090 or WO 97/01595).

14. Claims 1, 4, 8-18, and 13-31 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takano et al. (US Pat. No. 6,696,155).

All three Takano et al. references are equivalent documents. Accordingly, all citations are directed to the US Patent document.

Regarding claims 1, 4, 8-10, 13-22, and 24-31, Takano et al. disclose: ***(1 & 26)*** a prepreg which comprises a substrate and a resin composition (column 13, line 47 through column 16, line 11; column 21, line 31 through column 24, line 14; *claims 19-41 & 42-59*) containing a resin (column 14, lines 57-67; column 7, lines 43-63; *claims 19-41 & 42-59*), an inorganic filler (column 13, line 47 through column 14, line 16; column 8, lines 13-25; *claims 19-41 & 42-59*), and a silicone polymer (column 13, lines 47-60; *claims 19-41 & 42-59*), which resin composition being impregnated into the substrate (column 15, lines 23-30; *claims 19-41 & 42-59*), wherein the inorganic filler has previously been subjected to surface treatment by a silicone polymer (column 13, lines 47-60; *claims 19-41 & 42-59*);

(29) wherein said resin is at least one selected from the group consisting of epoxy resin, polyimide resin, melamine resin, and triazine resin (column 14, lines 57-67; column 7, lines 43-63; *claims 32 & 45*);

(30) wherein said inorganic filler is made of at least one material selected from the group consisting of calcium carbonate, alumina, titanium oxide, mica, aluminum carbonate, aluminum hydroxide, magnesium silicate, calcined clay, talc, silica, glass short fiber, aluminum borate whisker, and silicon carbide whisker (column 13, line 47 through column 14, line 16; column 8, lines 13-25; *claim 33*);

(31) wherein a varnish of said resin composition has been impregnated into said substrate, and said varnish has a solids content within a range of 50 to 80% by weight (column 15, lines 10-20);

(19) wherein the silicone polymer is a three-dimensionally cross-linked polymer (column 13, line 47 through column 14, line 12; *claims 19-41 & 42-59*); ***(8 & 20)*** wherein the silicone polymer is a silicone polymer containing at least one of a tri-functional siloxane unit represented by the formula: $R^1SiO_{3/2}$ (wherein R^1 represents a same or different organic group) or a tetra-functional siloxane unit represented by the formula: $SiO_{4/2}$ in the molecule (column 13, line 47 through column 14, line 12; *claims 19-41 & 42-59*); ***(9 & 21)*** wherein the silicone polymer is a silicone polymer containing 15 to 100 mol% of at least one tetra-functional siloxane unit and a tri-functional siloxane unit in the molecule based on the total siloxane units, and 0 to 85 mol% of a bi-functional siloxane unit (column 13, line 47 through column 14, line 12; *claims 19-41 & 42-59*); ***(10 & 22)*** wherein the silicone polymer is a silicone polymer containing 15 to 100 mol% of a tetra-functional siloxane unit, 0 to 85 mol% of a tri-functional siloxane unit, and 0 to 85 mol% of a bi-functional unit in the molecule based on the total siloxane units (column 13, line 47 through column 14, line 12; *claims 19-41 & 42-59*);

(4 & 27) a metal-clad laminated board which comprises at least one metal foil being laminated on both surfaces or one surface of said prepreg, or a laminated board thereof under heating and pressure (column 15, lines 23-30; *claims 40-41 & 58-59*); ***(13 & 14, 24 & 25, 28)*** a printed wiring board which comprises said metal-clad-laminated board obtained by subjecting the board to circuit processing (column 15, line 23 through column 16, line 5; *claims 40-41 & 58-59*);

(15) wherein the resin composition further contains a coupling agent (column 14, lines 30-40; *claims 31, 49 & 50*);

(16) wherein the inorganic filler has previously been subjected to surface treatment by silicone polymer and a coupling agent (column 14, lines 30-40; *claims 31, 49 & 50*);

(17) wherein the resin composition is a resin composition in which a resin is formulated in a solution containing a silicone polymer into which the inorganic filler is dispersed (column 14, lines 17-56; *claims 19-41 & 42-59*); and

(18) wherein the resin composition is a resin composition in which a resin is formulated in a solution containing a silicone polymer into which the inorganic filler is dispersed, and a coupling agent (column 14, lines 17-56; *claims 31, 49 & 50*).

Takano et al. do not explicitly disclose: ***(1)*** wherein the inorganic filler is in an amount of *25% by volume or more* based on the total volume of a solid component of the resin composition and a silicone polymer; and ***(26)*** which includes said inorganic filler in an amount of *25%-65% by volume* based on the total volume of the solid component of the resin composition (and the silicone polymer).

Rather, Takano et al. disclose, "In the resin composition (B) of the present invention, the ratio of the treated inorganic filler to the resin material is generally such that the treated inorganic filler is 1.0 to 500 parts by weight, preferably 10 to 100 parts by weight, per 100 parts by weight of the resins in the resin material," (column 15, lines 1-5). Furthermore, they use 50 wt% (of calcined clay, talc, or silica) in their working examples (column 21, line 31 through column 24, line 14).

It is the Examiner's view that the preferred and exemplary weight-based ranges of Takano et al. would have inherently overlapped the instantly claimed volume-based ranges. Evidence of this can be found in the Examples of the instant Specification:

- *In Example 1*, Applicant uses approximately 142 parts of resin per 180 parts of silicone treated calcined clay, wherein the ratio of inorganic filler based on the total volume of the solid component of the resin composition was about 37% by volume. This corresponds to roughly 56% by weight (180/322). Hence, an approximate conversion factor from weight% to volume% is 0.66, and a 50 wt% value would correlate to a 33 vol% approximate value.
- *In Example 7*, Applicant uses approximately 142 parts of resin per 200 parts of silicone treated calcined clay, wherein the ratio of inorganic filler based on the total volume of the solid component of the resin composition was about 40% by volume. This corresponds to roughly 58% by weight (200/342). Hence, an approximate conversion factor from weight% to volume% is 0.69, and a 50 wt% value would correlate to a 35 vol% approximate value.
- *In Example 8*, Applicant uses approximately 142 parts of resin per 180 parts of silicone treated talc, wherein the ratio of inorganic filler based on the total volume of the solid component of the resin composition was about 37% by volume. This corresponds to roughly 56% by weight (180/322). Hence, an approximate conversion factor from weight% to volume% is 0.66, and a 50 wt% value would correlate to a 33 vol% approximate value.
- *In Example 9*, Applicant uses approximately 142 parts of resin per 180 parts of silicone treated silica, wherein the ratio of inorganic filler based on the total volume of the solid component of the resin composition was about 31% by volume. This corresponds to roughly 56% by weight (180/322). Hence, an approximate conversion factor from

weight% to volume% is 0.55, and a 50 wt% value would correlate to a 28 vol% approximate value.

Therefore, it appears that the preferred and exemplary weight-based ranges of Takano et al. would have inherently overlapped the volume-based ranges of the instant invention.

Regarding claim 23, Takano et al. fail to explicitly disclose: ***(23)*** wherein a surface hardness of the metal-clad-laminated board at a portion containing no metal foil is 30 or more at 200°C, in terms of Barcol hardness. However, Takano et al. satisfy all of the chemical and material limitations of the instant invention. Accordingly, one of ordinary skill in the art would have expected these properties to be inherently present in the prepreg of Takano et al.

It has been found that, "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present,– *In re Spada*, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990).

Therefore, the instantly claimed hardness property would have been inherently present in the prepreg of Takano et al. because Takano et al. satisfy all of the chemical and material limitations of the instant invention.

Double Patenting

15. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re*

Goodman, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

16. Claims 1, 4, 8-10, and 13-31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 23-41 & 42-59 of U.S. Patent No. 6,696,155, *in light of the Specification (see: In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970))*. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The patented claims satisfy all of the limitations of the instant invention, except for: (1) the volume % range set forth in claims ***(1 & 26)***; (2) the solids content set forth in claim ***(31)***; and (3) the hardness property set forth in claim ***(23)***.

The preferred and exemplary wt% taught in Takano et al. would have inherently overlapped the volume% set forth in claims 1 & 26 *(see column 15, lines 1-5; Examples)*. The preferred and exemplary solids content taught in Takano et al. satisfies the solids content set forth in claim 31 *(see column 15, lines 10-20; Examples)*. The hardness property would have been inherently present in Takano et al. because the claims of Takano et al. satisfy all of the chemical and material limitations of the instant invention.

17. Claims 1, 4, 8-10, 13-28, 30, and 31 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over the combined limitations of claims 63-82 of U.S. Serial No. 10/221,171 (Allowed on August 28, 2006), *in light of the Specification (see: In re Vogel, 422 F.2d 438, 164 USPQ 619 (CCPA 1970))*. Although the conflicting claims are not identical, they are not patentably distinct from each other because:

The allowed claims satisfy all of the limitations of the instant invention, except for: (1) the volume % range set forth in claims ***(1 & 26)***; (2) the specific inorganic fillers set forth in claim ***(30)***; (3) the solids content set forth in claim ***(31)***; (4) the coupling agent and treatment method set forth in claims ***(15-18)***; and (5) the hardness property set forth in claim ***(23)***.

The preferred and exemplary wt% taught in Mizuno et al. would have inherently overlapped the volume% set forth in claims 1 & 26 *(see paragraphs 0097-0098; Examples)*. The preferred and exemplary inorganic fillers taught in Mizuno et al. satisfy the specific fillers set forth in claim 30 *(see paragraphs0097-0098)*. The preferred and exemplary solids content taught in Mizuno et al. satisfies the solids content set forth in claim 31 *(see paragraph 0100)*. The preferred and exemplary coupling agents and treatment methods taught in Mizuno et al. satisfy the coupling agents and treatment methods set forth in claims 15-18 *(see paragraphs 0097-0104)*. The hardness property would have been inherently present in Mizuno et al. because the claims of Mizuno et al. satisfy all of chemical and material limitations of the instant invention.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Feely whose telephone number is 571-272-1086. The examiner can normally be reached on M-F 8:30 to 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Michael J. Feely
Primary Examiner
Art Unit 1712

December 12, 2006

MICHAEL FEELY
PRIMARY EXAMINER